

1       1. A substantially pure polypeptide comprising an amino  
2 acid sequence at least 70% identical to any one of SEQ ID  
3 NOS:1, 3, 22, or 27, wherein the polypeptide is a  
4 transporter of an organic cation.

1       2. The polypeptide of claim 1, wherein the amino acid  
2 sequence is at least 80% identical to any one of SEQ ID  
3 NOS:1, 3, 22, or 27.

1       3. The polypeptide of claim 1, wherein the amino acid  
2 sequence is at least 90% identical to any one of SEQ ID  
3 NOS:1, 3, 22, or 27.

1       4. The polypeptide of claim 1, wherein the amino acid  
2 sequence is at least 95% identical to any one of SEQ ID  
3 NOS:1, 3, 22, or 27.

1       5. A substantially pure polypeptide comprising the  
2 sequence of any one of SEQ ID NOS:1, 3, 22, or 27.

1       6. A substantially pure polypeptide comprising the  
2 amino acid sequence of any one of SEQ ID NOS:1, 3, 22, or  
3 27, with up to 30 conservative amino acid substitutions,  
4 wherein the polypeptide is a transporter of an organic  
5 cation.

1       7. A substantially pure polypeptide encoded by a  
2 nucleic acid that hybridizes under stringent conditions to

3 a probe the sequence of which consists of any one of SEQ ID  
4 NOS:2, 4, 23, or 28, wherein the polypeptide is a  
5 transporter of an organic cation.

1 8. An isolated nucleic acid encoding the polypeptide of  
2 claim 1.

1 9. An isolated nucleic acid encoding the polypeptide of  
2 claim 5.

1 10. An isolated nucleic acid encoding the polypeptide  
2 of claim 6.

1 11. An isolated nucleic acid comprising a strand that  
2 hybridizes under stringent conditions to a single stranded  
3 probe, the sequence of which consists of any one of SEQ ID  
4 NOS:2, 4, 23, or 28, or the complement of any one of SEQ ID  
5 NOS:2, 4, 23, or 28.

1 12. The isolated nucleic acid of claim 11, wherein the  
2 nucleic acid encodes a polypeptide that is a transporter of  
3 an organic cation.

1 13. The nucleic acid of claim 12, wherein the amino  
2 acid sequence of the polypeptide comprises any one of SEQ  
3 ID NOS: 1, 3, 22, or 27.

1        14. The nucleic acid of claim 11, wherein the strand is  
2 at least 15 nucleotides in length.

1        15. The nucleic acid of claim 14, wherein the nucleic  
2 acid is an antisense nucleic acid that inhibits expression  
3 of a polypeptide comprising any one of SEQ ID NOS: 1, 3,  
4 22, or 27.

1        16. A vector comprising the nucleic acid of claim 8.

1        17. A vector comprising the nucleic acid of claim 9.

1        18. A vector comprising the nucleic acid of claim 10.

1        19. A vector comprising the nucleic acid of claim 11.

1        20. A vector comprising the nucleic acid of claim 12.

1        21. A cultured host cell comprising the nucleic acid of  
2 claim 8.

1        22. A cultured host cell comprising the nucleic acid of  
2 claim 9.

1        23. A cultured host cell comprising the nucleic acid of  
2 claim 10.

1        24. A cultured host cell comprising the nucleic acid of  
2 claim 11.

1        25. A cultured host cell comprising the nucleic acid of  
2 claim 12.

1        26. An antibody that specifically binds to the  
2 polypeptide of claim 1.

1        27. A method of producing a polypeptide, the method  
2 comprising isolating the polypeptide from the cultured host  
3 cell of claim 21.

1        28. The polypeptide of claim 1, wherein the polypeptide  
2 comprises the sequence Xaa1-Xaa2-Xaa3-Xaa4-Xaa5-Xaa6- Xaa7-  
3 Gly-Arg-Xaa8-Xaa9-Xaa10-Xaa11-Xaa12, wherein

4        Xaa1 is Leu, Ile, Val, Met, Ser, Thr, Ala, or Gly;

5        Xaa2 is Leu, Ile, Val, Met, Phe, Ser, Ala, or Gly;

6        Xaa3 is any amino acid;

7        Xaa4 is Leu, Ile, Val, Met, Ser, Ala Xaa5 is Asp or Glu;

8        Xaa6 is any amino acid;

9        Xaa7 is Leu, Ile, Val, Met, Phe, Tyr, Trp, or Ala;

10      Xaa8 is Arg or Lys;

11      Xaa9 is any amino acid;

12      Xaa10 is any amino acid;

13 Xaa11 is any amino acid; and

14 Xaa12 is Gly, Ser, Thr, or Ala.

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